

DETAILS OF THE WEATHER OF THE MONTH IN THE UNITED STATES.

CYCLONES AND ANTICYCLONES.

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Cyclones.—Chart II shows tracks of 8 primary and 4 secondary lows distributed by regions of origin as indicated below. Low No. VIII has been included with the Alberta lows, although outside the limits of that region as shown on Chart I, Mo. WEA. REV., SUPPLEMENT No. 1. Low No. III-B is not included in the table.

	Al- berta.	North Paci- fic.	South Paci- fic.	North- ern Rocky Moun- tain.	Colo- rado.	Texas.	East Gulf.	South Atlan- tic.	Cent- ral.	To- tal.
January, 1920....	7.0	1.0	0.0	0.0	1.0	1.0	1.0	11.0
Average number, 1892-1912.....	4.7	2.5	0.9	0.4	1.4	1.5	0.4	0.4	0.5	12.7

The month is somewhat remarkable in that only one center passed through the Gulf States and that, with the exception of low No. II-B, the centers of disturbances kept well to the northward.

Anticyclones.—On Chart III are set out the tracks of 11 primary highs and 4 secondary highs or offshoots of the types indicated below.

	North Pacific.	South Pacific.	Al- berta.	Plateau and Rocky Moun- tain region.	Hudson Bay.	Total.
January, 1920.....	0.0	1.0	10.0	4.0	0.0	15.0
Average number, 1892-1912.....	0.8	0.6	5.5	1.7	0.4	9.0

The most important features were the persistence of high pressure over the northern and central Plateau regions from about the 7th to 18th or 19th, inclusive, and the abnormally high pressures recorded in connecting with high No. XI and high No. IX.

THE WEATHER ELEMENTS.

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PRESSURE AND WINDS.

At the beginning of the year high pressure existed in the Plains region and a cold wave had advanced to the central valleys, while over the more eastern districts a low pressure area was moving over New England accompanied by light snow from the Great Lakes to New England, and by local rains in the Southeast. In the far West the weather was generally clear with continued cold in the Plateau region.

High pressure and severe cold prevailed over central and eastern districts until after the middle of the first decade and the coldest weather of the month was recorded during this period over the east Gulf and South Atlantic States. Minimum temperatures from 5° to 10° below zero F. were observed as far south as Tennessee and

North Carolina, and they were below freezing in all States to the southward, except along the immediate Gulf and Atlantic coasts and over portions of the Florida Peninsula. During the same period cold weather continued in the far West. The latter part of the decade had somewhat lower pressure in the central and eastern districts, with very general precipitation from the Plains region eastward, snow occurring over the northern, rain or snow over the central, and rain over southern districts, the rainfall being generally heavy from the Mississippi Valley northeastward to the headwaters of the Ohio. During this period high pressure continued in the far West and temperatures remained generally below the normal.

The first half of the second decade was without marked pressure variations although the barometer continued high in the Plateau region and moderately low along the northern border. By the middle of the decade low pressure had developed in the Plains region and during the following two days it moved into the central valleys and eastern districts, snow occurring quite generally from the Dakotas and Iowa eastward, and rain to the southward of the Ohio and along the Middle Atlantic coast. The latter part of the decade had generally high pressure in the central plateau, but along the northern border and generally over the central and eastern districts the pressure was comparatively low, particularly near the end when stormy conditions with more or less snow prevailed along the northern border from the Rocky Mountains to New England, extending southward during the early days of the last decade, at which time light snows occurred over many northern sections and rain was general to the southward, particularly about the 23d and 24th, when heavy falls occurred over extensive areas from Texas northeastward to the lower Ohio Valley. At the same time high pressure prevailed over the northern districts rising above 31 inches in eastern Montana, attended by the severest cold of the month. This high area moved along the northern border but its influence was felt far to the southward, freezing temperatures being experienced as far south as the Gulf coast. This was generally followed by lower pressure in the far northwest, accompanied by much warmer weather, and the highest temperatures of the month were recorded about this time over a large area from the upper Mississippi Valley westward.

During the latter part of the decade high pressure again prevailed over the northern districts, particularly on the 30th, when it became unusually high to the northward of the Dakotas attended by severe cold. At the end of the month this high pressure area covered the northeastern States and some of the highest barometer readings ever observed in that region were reported.

The average pressures for the month were above 30 inches and also above normal in all portions of the United States and likewise in Canada as far north as observations disclose.

The distribution of pressure during the month, particularly the prevalence of high areas along the northern border, favored winds with a northerly component over much of the country from the Great Plains eastward. Over the far western district the prevailing winds were likewise mostly from northerly points except from Montana westward, where they were frequently from the south. Severe winds were rather infrequent although they occurred very generally along the North Atlantic coast on the 14th and again on the 17th and 18th.

TEMPERATURE.

The month was decidedly cold as a whole from the Great Lakes eastward to New England, the daily values in portions of this area remaining below normal nearly the entire month. The periods of greatest cold were during the first few days of the month over nearly all southern sections from Texas eastward and south of the Ohio River; about the 8th to 10th from Texas and Oklahoma westward including the greater part of the region from the Rocky Mountains to the Pacific; about the 24th to 25th from the Great Lakes and Ohio Valley westward to the northern Rocky Mountains; and at the end of the month over the northeastern States. At Burlington, Vt., the minimum temperature slightly after midnight of the 31st, -28° , was the lowest ever reported at that station.

The highest temperatures were generally observed during the last decade of the month although along the Pacific coast they occurred on the 16th and 17th when local maximum values were higher than any previously observed in January. Over the southern States to eastward of the Mississippi some unusually high temperatures for January were observed on the 23d and 24th.

The monthly means were well below normal from the upper Mississippi Valley eastward to the Atlantic coast, the deficiencies ranging from 8° to 12° over the Great Lakes and the northern portions of New York and New England. Mean temperatures were also below normal over a limited area in western Colorado and eastern Utah, where severe cold persisted throughout the month, despite the fact that nearby localities on all sides had temperatures above the normal. At Grand Junction, Colo., the temperature was below the normal on all except five days of the month, and from October 1, 1919, to January 31, 1920, a period of 123 days, only 23 days have been warmer than the average.

With the exception of the area referred to above, practically all portions of the country from the Great Plains westward had monthly mean temperatures above the normal, and from Arkansas and Louisiana eastward all southern States likewise had averages above the normal.

PRECIPITATION.

The month was generally far less stormy than is usual for midwinter, and large portions of the central valleys and Northwest were almost entirely free from severe storms.

The principal periods of precipitation were during the middle and latter parts of the first decade when some unusually heavy rains for winter occurred in Arizona and heavy rains prevailed from central Texas northeastward to the Ohio Valley, with more or less rain or snow over most other central and eastern districts; about the middle of the second decade, when snows and rains were general from the Mississippi River eastward; and again in the middle of the third decade, when precipitation was general and in some cases heavy in the Gulf and Atlantic coast States, and more or less rain or snow occurred over other districts from the Great Plains eastward.

For the month as a whole the precipitation was greater than normal throughout the Gulf region, except in por-

tions of Florida, the southern drainage area of the Ohio River, and over portions of the northern Plains, and southern Mountain districts. Throughout the other sections of the country the falls were generally less than normal, particularly over the Pacific Coast States.

In California the rainfall as a whole was the least for January in the history of the State, and this is accentuated by a general shortage in precipitation for each of the preceding four months, and further that the past three years have also had deficient precipitation. As a result the reservoirs at the end of the month were being rapidly emptied, the streams were at usually low stages, and the ground water had receded to the lowest known levels. In view of the paramount importance of an adequate supply of water for agricultural and power purposes, peculiar to that State, the present depletion of the water supply at a period when it is normally at the maximum, is cause for serious fears that disastrous results face the interests of the State during the coming summer.

SNOWFALL.

During the early part of the month some snow fell locally in the Lake region and in the mountain districts of Utah and Colorado, and the snow cover was increased slightly in a few places, but only very light falls occurred in the high mountains of California and the far Northwest. Toward the middle of the month light snows fell in portions of the western mountain districts, while there were moderate falls in the northern States from the Dakotas to New England and from the Ohio Valley eastward.

During the latter half of the month rather frequent light snows fell in the northern districts from the Mississippi Valley eastward, and a rather extensive snow, sleet, and ice storm moved over much of the country from the Ohio and Tennessee Valleys to the Atlantic. The heavy ice coating greatly interfered with traffic and caused damage to overhead wires, orchards, and shrubbery. In the western mountains there was but little snow during this period save in portions of Montana and a few points in Idaho and Colorado.

For the month as a whole there was a general decrease in the snow cover over all portions of the country, it being less at the end of the month than at any time since the beginning of the winter. The absence of any material additions during January to the stock of snow in the mountains of the far West continues to cause apprehension regarding the water supply, notably in California, where the cover is unprecedentedly light for the period of the year.

RELATIVE HUMIDITY.

In central California and portions of Nevada the relative humidity was far less than normal, and locally in the northern Rocky Mountain States, the Great Lakes, and Appalachian region and along the Atlantic seaboard the relative humidity was likewise generally below the seasonal average. Throughout most of the remaining sections of the country there was relatively more moisture in the atmosphere than is usual for January, although the departures from normal were small, except in portions of the southern Plains and Mountain regions, where they were unusually large.